NASA Procedural Requirements

NPR 8580.1
Effective Date: November 26, 2001
Expiration Date: November 26, 2008

COMPLIANCE IS MANDATORY

Printable Format (PDF)

Subject: Implementing The National Environmental Policy Act And Executive Order 12114

Responsible Office: Environmental Management Division

APPENDIX J. Other NEPA Documents

Appendix J provides examples of NEPA documents published in the Federal Register. Figure J-1 is a sample Finding Of No Significant Impact (FONSI). Figures J-2 and J-3 are two examples of a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS). Figures J-4 and J-5 are two examples of a Notice of Availability (NOA) for Draft EIS's. Figure J-6 is an example of how to address comments in a Final EIS Response to Comments section. Figures J-7 and J-8 are two examples of NOA's for Final Environmental Impact Statements. Figure J-9 is a sample contractor disclosure statement. Please disregard the extraneous characters (e.g., hyphenated words in mid-sentence; <>) sometimes introduced during downloading of electronic files from the internet.

Figure J-1 FONSI for the Stardust Mission

[Federal Register: May 7, 1998 (Volume 63, Number 88)] [Notices] Page 25236-25237] From the Federal Register Online via GPO Access [wais.access.gpo.gov] [DOCID:fr07my98-109]

= =

- -

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

[Notice 98-062]

National Environmental Policy Act; Stardust mission

AGENCY: National Aeronautics and Space Administration (NASA).

ACTION: Finding of no significant impact.

- -

SUMMARY: Pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. 4321, et seq.), the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 CFR parts 1500-1508), and NASA policy and procedures (14 CFR part 1216 subpart 1216.3), NASA has made a FONSI with respect to the proposed Stardust mission, which would involve a flight to the comet 81-P/Wild-2 and return of cometary and interstellar dust samples to Earth. The baseline mission calls for the Stardust spacecraft to be launched aboard a Delta II 7426 from Cape Canaveral Air Station (CCAS), Florida, in February 1999, and to return the sample return canister (SRC) to Utah Test and Training Range (UTTR) approximately 65 kilometers (40 miles) southwest of Salt Lake City, Utah in January 2006.

DATE: Comments in response to this notice must be provided in writing to NASA on or before June 8, 1998.

ADDRESSES: Comments in response to this FONSI should be addressed to Mr. Mark Dahl, NASA Headquarters, Code SD, 300 E Street SW, Washington, DC 20546. The Environmental Assessment (EA) prepared for the Stardust

mission which supports this FONSI may be reviewed at:

(a) NASA Headquarters, Library, Room 1J20, 300 E Street SW, Washington, DC 20546

(b) NASA, Spaceport USA, Room 2001, John F. Kennedy Space Center, Florida, 32899 (407-867-2622). Please call Lisa Fowler beforehand at 407-867-2468 so that arrangements can be made.

(c) Jet Propulsion Laboratory, Visitors Lobby, Building 249, 4800 Oak Grove Drive, Pasadena, CA 91109 (818-354-5179) The EA may also be examined at the following NASA locations by contacting the pertinent Freedom of Information Act Office:

(d) NASA, Ames Research Center, Moffet Field, CA 94035 (415-604-4191)

(e) NASA, Dryden Flight Research Center, Edwards, CA 93523 (805-258-2663)

(f) NASA, Goddard Space Flight Center, Greenbelt, MD 20771 (301-483-6255)

(g) NASA, Johnson Space Center, Houston, TX 77058 (281-483-8612)

(h) NASA, Langley Research Center, Hampton, VA 23665 (757-864-2497)

(i) NASA, Lewis Research Center, 21000 Brookpark Road, Cleveland, OH 44135 (216-433-2755)

(j) NASA, Marshall Space Flight Center, Huntsville, AL 35812 (256-544-5549)

(k) NASA, Stennis Space Center, MS 39529 (601-688-2164) A limited number of copies of the EA are available for persons wishing a copy by contacting Mr. Dahl, at the address or telephone number indicated herein.

FOR FURTHER INFORMATION CONTACT: Mark Dahl, 202-358-1544.

SUPPLEMENTARY INFORMATION: NASA has reviewed the EA prepared for the Stardust mission and has determined that it represents an accurate and adequate analysis of the scope and level of associated environmental impacts. The EA is hereby incorporated by reference in this FONSI.

NASA is proposing to launch the Stardust mission, which would deliver a single spacecraft within 150 to 1000 kilometers (km) (93 to 620 miles [mi]) of the 81-P/Wild-2 comet nucleus during a flyby in 2004 to gather 1000 dust particles from the comet's coma. The proposed action calls for using a Delta II 7426 launch vehicle with a Star 37FM upper stage to inject the Stardust spacecraft into its initial heliocentric orbit in February 1999. The proposed mission design calls for the Stardust spacecraft to swing by Earth once during its seven- year tour. This gravity assist would allow the spacecraft to gain the additional energy required to intercept the comet Wild-2. During its flight, Stardust would transmit pictures of the Earth and Moon taken during the Earth swingby, transmit pictures of the comet nucleus and coma taken during comet encounter, nondestructively capture interstellar and cometary dust particles, and return these samples to Earth for study by the international scientific community. Neither the spacecraft nor the return canister would carry radioactive material.

The primary science objective for the Stardust mission is to non- destructively collect comet dust particles greater than 15 microns (m) in size, at an encounter velocity of less than 6.5 km/ second (s) (4 mi/s), and return them to Earth for scientific study.

Secondary and tertiary scientific objectives include the collection of intact particles from the Interstellar Dust Stream impinging into our solar system; provide multiple images of Wild-2, with ten times the resolution of any comet image to date, taken within 2000 km (1240 mi) of the comet nucleus; provide in-situ participle analysis capable of resolving abundant elements in comentary fields for dust participles during the coma fly-through; provide in-situ participle analysis for interstellar dust particles and planetary dust; collect comet coma molecules and return them to Earth; provide dust flux [[**Page** 25237]] measurement of participles having a mass less than 1 gram; and measure the dust mass flux, number of large participles, and comet mass upper limit. The Stardust mission is proposed to gather interstellar and cometary material and return it to Earth where the world scientific community can systematically analyze it with powerful research equipment in their laboratories.

Samples from Wild-2 would offer a glimpse of the best preserved fundamental building blocks out of which our Solar System formed. In addition, during its first two orbits about the Sun on its way to Wild- 2, the Stardust spacecraft would collect approximately 100 interstellar dust participles. This would provide the international scientific community its first opportunity to collect and analyze these interstellar dust grains.

Alternatives that were evaluated include: (1) No-Action (i.e., no Stardust mission); (2) launch vehicles options, including the Space Shuttle, Taurus, and Atlas configurations, as well as other Delta configurations; and (3) alternative landing sites. Failure to undertake the Stardust mission would disrupt the execution of NASA's Solar System Exploration Program as defined by the Agency's Solar System Exploration Committee. The scientific value of having actual bona-fide, relatively pristine comet samples is high. While environmental impacts would be avoided by cancellation of the proposed mission, the loss of the scientific knowledge and database from carrying out the mission could be substantial. Of the launch vehicles evaluated, the Delta II 7426/ Star 37 FM most closely matches the Stardust mission requirements, and minimizes adverse environmental impacts within the cost constraints of this

Discovery Mission.

Expected impacts to the human environment associated with the mission arise almost entirety from the normal launch of the Delta II 7426, and to a much lesser extent, the entry, descent, landing, and recovery operations of the sample return. Air emissions from the exhaust produced by the solid propellant Graphite Epoxy Motors (GEM) and liquid first stage primarily include carbon monoxide, hydrochloric acid, aluminum oxide in soluble and insoluble forms, carbon dioxide, and deluge water mixed with propellant by-products. Air impacts will be short-term and not substantial. Short-term water quality and noise impacts, as well as short-term effects on wetlands, plants, and animals, would occur in the vicinity of the launch complex. These short-term impacts are of a nature to be self-correcting, and none of these effects would be substantial. There could be no impact on threatened or endangered species or critical habitat, cultural resources, or floodplains at or in the vicinity of CCAS. Accident scenarios have also been addressed and would not result in substantial environmental impacts.

The second stage would be ignited at an altitude of 118 kilometers (74 miles), which is in the ionosphere. Although the second stage would achieve orbit, its orbital decay time would fall below the limit NASA has set for orbital debris consideration. After burning its propellant to depletion, the second stage would remain in Low Earth Orbit (LEO) until its orbit eventually decayed. The second stage is designed to burn up as it reenters Earth's atmosphere. The Stardust Project will follow the NASA guidelines regarding orbital debris and minimizing the risk for uncontrolled reentry into the Earth's atmosphere.

The level and scope of environmental impacts associated with the launch of the Delta II 7426 vehicle are well within the envelope of impacts that have been addressed in previous FONSI's concerning other launch vehicles and spacecraft.

At capture, the comet and interstellar dust particles would be traveling at very high speed relative to the spacecraft collector and would be stopped in 1 to 3 centimeters (cm) of glass (aerogel) within microseconds. The particles would undergo extreme heating during impact and capture. This is a much more severe environment than any known sterilization techniques these particles might be subjected to on Earth. Because there is little possibility of biological contamination during sample collection, and thus an insignificant chance of returning any living organism to Earth (known as back-contamination), the Stardust project has requested and received certification from NASA's Planetary Protection Officer as a Planetary Protection Category V mission, "Unrestricted Earth Return", for the inbound mission phase.

Upper altitude emissions associated with reentry of the Sample Return Capsule (SRC) would include ablation products of the thermal protection system on the forebody. The SRC would enter the earth's atmosphere directly above UTTR's South Range with a velocity of approximately 13 km/s (8 mi/s). It would decelerate to 600 meters/s (m/ s) (1962 fee/s [ft/s]) in two minutes. The material baselined to be used for the forebody heatshield is Phenolic Impregnated Ceramic Ablator (PICA), recently developed at NASA's Ames Research Center. Due to friction, the peak heating would occur at approximately 54 seconds after reentry begins, which corresponds to an altitude of approximately 60 km (196,860 ft) above the earth. The ablation would continue for about twenty seconds. Models conservatively predict that less than 22 percent of the total PICA material would ablate during reentry, and that ablation would cease at approximately 46.5 km (152,566 ft) above the earth. The total mass of the PICA material would be about 8.5 kg (18.7 pounds [lb]); of this, a maximum of 1.86 kg (4.09 lb) would be ablated during reentry. The chemical species produced during ablation would be dissipated in the shock wave behind the SRC. Two of the chemical species produced in small amounts during ablation, hydrogen cyanide and cyanide (37 grams [g] and 149 g, respectively), are considered to be acutely toxic to humans when inhaled. The ablation process and thus the production of these species would cease more than 46 km (150,000 ft) above the earth. Therefore, these concentrations would disperse in the large volume of air in the upper atmosphere and would not constitute a danger to health or life on earth. The SRC heatshield would be rapidly cooling during the subsonic portion of the descent, and would not be emitting into the lower atmosphere.

UTTR is primarily used by the U.S. Air Force as a bombing and artillery test and training range. The entry, descent, landing, and recovery operations for the 42.6 kilogram (93.7 lb) SRC would be well within the bounds of the day-to-day operations carried on at UTTR. There would be no impact on threatened or endangered species or critical habitat, cultural resources, wetlands or floodplains at UTTR. Off-nominal recovery scenarios have also been addressed. No other impacts of potential environmental concern have been identified.

On the basis of the Stardust EA, NASA has determined that the environmental impacts associated with the mission would not individually or cumulatively have a significant impact on the quality of the human environment. NASA will take no final action prior to the expiration of the 30-day comment period.

Earle K. Huckins III,
Deputy Associate Administrator for Space Science.
[FR Doc. 98-12155 Filed 5-6-98; 8:45 am]
BILLING CODE 7510-01-M

[Federal Register: May 18, 1998 (Volume 63, Number 95)] [Corrections] Page 27346] From the Federal Register Online via GPO Access [wais.access.gpo.gov] [DOCID:fr18my98-119]

- -

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

[Notice 98-062]

National Environmental Policy Act; Stardust Mission

Correction

In notice document 98-12155 beginning on **page 25236** in the issue of Thursday, May 7, 1998, make the following corrections:

1. On **page 25236**, in the third column:

a. In the fourth and eighth lines from the bottom "participle" should read "particle".

b. In the sixth line from the bottom "participles" should read "particles".

2. On **page** 25237, in the first column:

a. In the first and fourth lines "participles" should read "particles".

b. In first full paragraph, in the ninth line "participles" should read "particles".

c. In the last paragraph, in the third line "entirety" should read "entirely".

BILLING CODE 1505-01-D

Figure J-2 NOI for the X-33 Program

[Federal Register: October 7, 1996 (Volume 61, Number 195)] [Notices] Page52467-52469] From the Federal RegisterOnline via GPO Access [wais.access.gpo.gov] [DOCID:fr07oc96-81]

= =

- -

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

[Notice 96-118]

National Environmental Policy Act; X-33 Program: Vehicle Design and Flight Demonstration

AGENCY: National Aeronautics and Space Administration (NASA).

ACTION: Notice of intent to prepare an environmental impact statement (EIS) and conduct scoping for the development and testing of the X-33 vehicle.

- -

SUMMARY: Pursuant to the National Environmental Policy Act of 1969 (NEPA), as amended (42 U.S.C. 4231 et seq.), the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 CFR Part 1500-1508), and NASA policy and procedures (14 CFR Part 1216 Subpart 1216.3), NASA intends to prepare an EIS for Phase II of the X-33 Program (hereinafter referred to as the "Program"), which would involve development and demonstration of the X-33 test vehicle. The EIS will address environmental issues associated with the fabrication, assembly, testing, and preparation of the flight operations and landing sites associated with the X-33 technology demonstrator spaceplane. The purpose of the proposed test program is to demonstrate the feasibility of technology which could result in commercially viable Reusable Launch Vehicles (RLV) with certain aircraft-like operational characteristics. The proposed Phase II of the Program would involve final design, assembly and testing the X-33 vehicle by the year 2000.

Flight operations and landing site alternatives are under consideration to satisfy flight testing requirements. The flight test demonstration program would require short-range, mid-range, and long- range landing sites remote from the flight operations (i.e., vehicle takeoff) site at distances of approximately 160, 640, and 1,360 kilometers (km) (100, 400, and 850 miles (mi)) respectively. The reasonable alternative sites for the proposed flight operations are located within Edwards Air Force Base (EAFB) near Lancaster, California. Alternative landing sites for the flight test activities are being considered in the States of California, Utah, Montana, and Washington.

NASA is the lead agency in the preparation of the EIS. It is anticipated that components of the U.S. Department of Defense, the Bureau of Land Management, and the Federal Aviation Administration will act as cooperating agencies.

DATES: Interested parties are invited to submit comments on or before November 29, 1996, to assure full consideration during the scoping process.

ADDRESSES: Comments should be addressed to Dr. Rebecca C. McCaleb, Director, Environmental Engineering and Management Office, Code AE01,

[[**Page** 52468]]

Marshall Space Flight Centers, Alabama 35812. In addition, comments may be sent to Dr. McCaleb electronically at (X33EIS@msfc.nasa.gov) or by facsimile at 205-544-8259. Information repositories will be maintained at the following locations:

(a) NASA Headquarters, Library, Room 1J20, 300 E Street SW, Washington, DC 20546.

(b) NASA, Marshall Space Flight Center, Library, Building 4200, Huntsville, AL 35812.

(c) Kern County Library, Boron Branch, 27070 Highway 5, Boron, CA 93516.

(d) Kern County Library, Ridgecrest Branch, 131 East Las Flores Street, Ridgecrest, CA 93555.

(e) Los Angeles County Library, Lancaster Branch, 1150 West Avenue J, Lancaster, CA 93524.

(f) Palmdale City Library, 700 East Palmdale Boulevard, Palmdale, CA 93550.

(g) San Bernadino County Library, Barstow Branch, 304 East Buena Vista, Barstow, CA 92311.

(h) Great Falls Public Library, 301 2nd Avenue North, Great Falls, MT 59401.

(i) Moses Lake Library, 418 East 5th Street, Moses Lake, WA 98837.

(j) Dugway Proving Grounds Library, 5124 Kisstler Avenue, Dugway, UT 84022.

(k) Tooele Library, 47 East Vine Street, Tooele, UT 84074.

(l) Salt Lake City Library, 209 East 500 South, Business/Science Department, Salt Lake City, UT 84111.

FOR FURTHER INFORMATION CONTACT; Dr. Dominic A. Amatore, Deputy Director, Public Affairs Office, Code CA01, Marshall Space Flight Center, AL 35812, 205-544-6533. His office will ensure that the appropriate source of information is provided.

SUPPLEMENTARY INFORMATION: The key objectives of the X-33 Design and Flight Demonstration Program include:

--Reduce business and technical risks to privately financed development and operation of a next generation space transportation system through ground and flight tests of a spaceplane technology demonstrator.

--Ensure that the X-33 design and major components are usable and scaleable to a full scale, single-stage-to-orbit (SSTO) RLV

--Demonstrate "aircraft like" operations such as reusability and affordability.

--Demonstrate autonomous capability (i.e., vehicle does not have a pilot or onboard flight crew but is controlled by onboard flight management system; vehicle is tracked by telemetry and on systems; and human intervention capability to modify trajectory is maintained at the flight operations site) from takeoff to landing.

--Verify operability and performance in "real world" environments.

The X-33 test vehicle is planned as an approximately one-half scale reusable spaceplane. The vehicle would takeoff in a vertical position and use conventional runways to land horizontally. The X-33 vehicle would consist of a lifting body airframe with two cryogenic liquid propellant tanks (liquid hydrogen (LH2) and liquid oxygen (LOX)) placed within the aeroshell, and would use two linear aerospike main engines. Water would be the primary product of the LOX/LH2 combustion. The entire spaceplane (with all fuel tanks and engines) would takeoff and land as a single unit. The flight profile includes takeoff with engine burn until flight speed and altitude objectives are reached; at that point, the engines would cut off.

The flight test plan to meet the Program objectives would involve flights of approximately 160, 640, and 1,360 km (100, 400, and 850 mi). During the landing sequence, the spaceplane would glide to the landing site in an unpowered manner. Flight tests would involve speeds of up to Mach 15 and altitudes up to approximately 75,800 meters (250,000 feet). None of the X-33 tests flights would achieve Earth orbit. Ground operations and servicing (e.g., checkout, refueling, etc.) would be conducted with "aircraft like" procedures and systems.

The test flight program is planned to be conducted in three stages, with all takeoffs occurring from the same flight operations site. The three stages would involve the incremental expansion of distance and speed referred to as the "flight envelope expansion" which allows the development program to minimize risk while achieving test objectives. The three stage approach would necessitate short-range, mid-range, and long-range landing sites to achieve maximum speeds of Mach 4, 12, and 15, respectively. After each test flight, the X-33 would be ferried back to the

takeoff site by a Boeing 747 aircraft in a manner similar to that used for the transport of Space Shuttle orbiters. The test program is currently baselined for a combined total of 15 flights.

Alternatives to be considered for this proposal include, but are not limited to:

--Alternative flight operations (takeoff) sites

--Short-range landing sites

--Mid-range landing sites

--Long-range landing sites

--The "no action" alternative which defines the baseline conditions that would prevail in the absence of the X-33 test program.

Three locations within EAFB are the reasonable alternatives being considered for the flight operations site. Reasonable short-range landing sites being considered are Silurian Lake, a dry lake bed, northeast of Barstow, California; and China Lake Naval Weapons Center, near Ridgecrest, California. The baseline alternative for the mid-range landing site is Michael Army Air Field at Dugway proving Grounds, Utah. Reasonable long-range landing sites being considered are Port of Moses Lake, Washington; and Malmstrom Air Force Base near Great Falls, Montana. Analyses conducted to date indicate that other potential flight operations and landing sites are inadequate to meet the requirements of the Program. The "no action" alternative (i.e., absence of the X-33 Program) would mean that the RLV Program, as planned, could not proceed, resulting in continued reliance on existing U.S. Government owned or controlled space launch vehicles, such as the Space Shuttle and expendable launch vehicles; and/or space launch vehicles owned and operated by foreign governments.

The EIS will consider the potential environmental impacts associated with the test program and related construction and modification of facilities. An initial assessment of potential environmental impacts indicates that the EIS should focus on sonic booms; potential effects on cultural resources, and threatened and endangered species; on-range and off-range flight test paths; and environmental impacts at the reasonable flight operations and landing site alternatives.

Public scoping meetings will be held at the following dates and locations:

(a) Monday, October 21, 1996; 7:00 p.m. Social Rehabilitative Services Auditorium, Sanders Avenue, Helena, MT 59601.

(b) Tuesday, October 22, 1996: 6:00 p.m. Great Falls High School, 1900 Second Avenue, South, Great Falls, MT 59405.

(c) Thursday, October 24, 1996; 7:00 p.m. Washington State National Guard Armory, 6500 32nd Avenue, N.E., Moses Lake, WA 98837.

(d) Monday, October 28, 1996; 7:00 p.m. Dugway Post Theater, US Army Dugway proving Grounds, Dugway, UT 84022.

(e) Tuesday, October 29, 1996; 7:00 p.m. Tooele Senior Center, 59 East Vine Street, Tooele, UT 84074.
[[**Page** 52469]]

(f) Wednesday, October 30, 1996; 7:00 p.m. Quality Inn Airport, 5575 West Amelia Earhart Drive, Salt Lake City, UT 84116.

(g) Tuesday, November 12, 1996; 7:00 p.m. Best Western Antelope Valley Inn, 44055 North Sierra Highway, Lancaster, CA 93534.

(h) Wednesday, November 13, 1996; 7:00 p.m. Carriage Inn, 901 North China Lake Boulevard, Ridgecrest, CA 93555.

(i) Thursday, November 14, 1996; 7:00 p.m. West Boron Elementary School, 12300 Del Oro, Boron, CA 93516.

(j) Saturday, November 16, 1996; 10:00 a.m. Holiday Inn, 1511 East Main Street, Barstow, CA 92311.

Written public input and comments on environmental impacts associated with the proposed Program, including, but not limited to, flight operations and landing site options, as well as related environmental concerns, are hereby solicited.

Dated: October 1, 1996.
Benita A. Cooper,
Associate Administrator for Management Systems and Facilities.
[FR Doc. 96-25643 Filed 10-4-96; 8:45 am]
BILLING CODE 7510-10-M

Figure J-3 NOI for the Europa Mission on

[Federal Register: October 7, 1998 (Volume 63, Number 194)]
[Notices]
[Page 53938]
From the Federal Register Online via GPO Access [wais.access.gpo.gov]
[DOCID:fr07oc98-96]

[[Page 53938]]

= =

\- -

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

[Notice 98-136]

National Environmental Policy Act; Europa Orbiter Mission

AGENCY: National Aeronautics and Space Administration (NASA).

ACTION: Notice of intent to prepare an environmental impact statement and conduct scoping for the Europa Orbiter mission.

\- -

SUMMARY: Pursuant to the National Environmental Policy Act of 1969, as amended (NEPA) (42 U.S.C. 4321, et seq.), the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 CFR Parts 1500-1508), and NASA policy and procedures (14 CFR Part 1216 Subpart 1216.3), NASA intends to prepare an Environmental Impact Statement (EIS) for NASA's Europa Orbiter mission. The EIS will address the environmental impacts associated with launching and operating the mission.

The Europa Orbiter mission is currently proposed to launch in November 2003 or December 2004 from Kennedy Space Center, Florida, on an orbital mission around Jupiter's icy moon Europa. The launch date would be affected by the launch date for NASA's proposed Pluto-Kuiper Express mission. Concurrent with the publication of this notice of intent (NOI), NASA is publishing an NOI to prepare an EIS for the Pluto-Kuiper Express mission. Environmental impacts to be considered in the EIS are those impacts associated with a normal launch from Kennedy Space Center, and the potential radiological and non-radiological risks of the mission. The baseline plan for the Europa Orbiter mission would include the use of a Radioisotope Power System (RPS) and approximately 50 Radioisotope Heater Units (RHU's).

DATES: Interested parties are invited to submit written comments to NASA on or before November 23, 1998, to assure full consideration during the scoping process.

ADDRESSES: Written comments should be addressed to Mr. David Lavery, Advanced Technology and Mission Studies Division, Code SM, NASA Headquarters, Washington, DC 20546-0001. While hard copy comments are preferred, comments by electronic mail may be sent to:
osseuropa@hq.nasa.gov.

FOR FURTHER INFORMATION CONTACT: Mr. David Lavery, 202-358-1109; electronic mail:
osseuropa@hq.nasa.gov.

SUPPLEMENTARY INFORMATION: NASA's Space Science Program seeks to investigate the mysteries of the Universe, explore the Solar System, find planets around other stars, and search for life beyond Earth. The Europa Orbiter mission would cast light on our search for the chemical and biological origins of life, and broaden our knowledge of our Solar System. Hydrothermal zones on Earth have been shown to harbor life and may represent the type of environment in which life might have arisen on Earth. If there is (or once was) an ocean and related volcanism on Europa, as suggested by results from NASA's Galileo Jupiter orbiter mission, then the Europa Orbiter mission may lead to the discovery of life beyond Earth.

The science goals of the Europa Orbiter and Pluto-Kuiper Express missions are independent. The implementation of either mission has no effect on the need for and implementation of the other mission other than logistical timing factors.

The Europa Orbiter spacecraft is currently proposed to launch in November of 2003 or December of 2004 from Kennedy Space Center, Florida, on an orbital mission around Jupiter's icy moon Europa. The currently proposed spacecraft and mission design would probably require the use of the Space Shuttle with an Inertial Upper Stage and one or more additional solid rocket stage(s) to launch the Europa Orbiter. The proposed trajectory would involve a direct flight and not require any planetary gravity assist maneuvers.

If the mission utilizes an RPS, it is anticipated that, due to relatively low spacecraft electrical power requirements and a potential for improved power system efficiency, the spacecraft w

... need continuation

| TOC | Preface | Chp1 | Chp2 | Chp3 | Chp4 | Chp5 | Chp6 | Chp7 | Chp8 | Chp9 | Chp10 | Chp11 | Chp12 | Chp13 | AppdxA | AppdxB | AppdxC | AppdxD | AppdxE | AppdxF | AppdxG | AppdxH | AppdxI | AppdxJ | AppdxK | AppdxL | ALL |

| NODIS Library | Program Management(8000s) | Search |

DISTRIBUTION:
NODIS